

## Activity | Healing the Ozone: First Steps Toward Success

**Background:** The ozone layer is a region of the Earth's stratosphere that contains a relatively high concentration of the gas ozone ( $O_3$ ). This concentration allows the ozone layer to absorb most of the sun's ultraviolet light, protecting Earth's inhabitants from the harmful energy. In the 1970s, scientists began to worry that the ozone layer was being depleted by manufactured chemicals like chlorofluorocarbons, or CFCs, commonly used as a refrigerant and in aerosols.

**Objective:** Explore the health of the ozone layer over time, and the political, social and economic factors that influenced its changes.

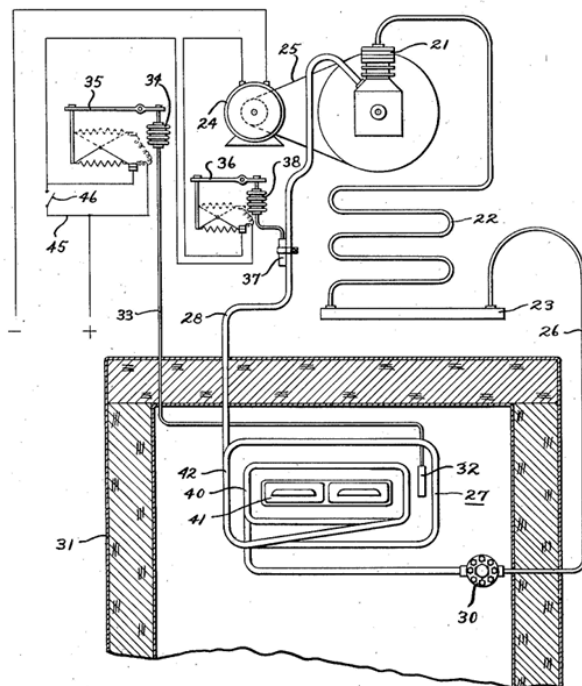
**Directions:** Use the Observe, Reflect, Question protocol to analyze the provided image. Think about what components of this device might be affecting the environment.

May 23, 1933.

A. A. McCORMACK

1,910,996

Filed Sept. 30, 1930



INVENTOR  
Alex A. McCormack  
BY  
Spencer, Hardman & Fitch  
ATTORNEYS

**Observe:** What do you see? What do you notice first?

**Reflect:** What is happening in this image? What can you learn from examining it?

**Question:** What do you wonder about?

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| Once the class has determined what this object is, brainstorm a list of effects of this invention on society and the environment. |  |
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| <b>As you explore the <a href="#">NASA Ozone Watch Maps</a>, record your observations below.</b> |  |
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| June 2023 Observations: What do you notice? |  |
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| <b>Explore data to answer the question: How has the amount of ozone in the atmosphere over Antarctica changed since 1979?</b> |  |
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| What data will you explore to answer this question? |  |
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| What are your initial conclusions based on the data you explored? |  |
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| <b>Conclusions:</b> In the space below, explain your answer to the question above. Present your answer with supporting evidence. This is what you will showcase to other groups. |  |
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| <b>Gallery Walk Observations:</b> <ul style="list-style-type: none"> <li>• Note any conclusions that differed from your own</li> <li>• Note any additional data sources that support your conclusion</li> <li>• Note data sources that negate your conclusion.</li> </ul> |  |
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**Changes in Atmospheric CFC levels over time.** Record the trend your group observed in the CFC graph. Be sure to record your observations in the correct row.

| CFC Type                                                                   | Trend |
|----------------------------------------------------------------------------|-------|
| <a href="#">CFC-113</a>                                                    |       |
| <a href="#">CFC-114</a>                                                    |       |
| <a href="#">CFC-115</a>                                                    |       |
| <a href="#">CFC-11</a>                                                     |       |
| <a href="#">CFC-12</a>                                                     |       |
| <a href="#">CFC-13</a>                                                     |       |
| How do the atmospheric CFC levels compare to the atmospheric ozone levels? |       |

**Watch** the Retro Report video “[Healing the Ozone: First Steps Toward Success](#)” and record events related to ozone depletion and repair. These events can be scientific, political, economic and/or social.

| When did the event occur? | What happened? Explain which category this event falls into. |
|---------------------------|--------------------------------------------------------------|
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**Do Now:** Why is the story of the ozone layer relevant to conversations today surrounding climate change?

**Climate Change Timeline:** Review the timeline that was created by [USA Today](#) to outline key events in response to the Earth's changing climate. Focus on pointing out similarities and differences between climate change and ozone depletion.

**Similarities:**

**Differences:**

**Discussion Planning:** Respond to the questions: Do you predict the climate change issue will have a conclusion like the ozone layer issue? Why or why not? Be sure to include evidence from the video, timeline, and data sources.

**Exit Ticket:** Provide a written response in the area below.

Do you predict the climate change issue will have a conclusion like the ozone layer issue? Why or why not?